STATE OF NEW HAMPSHIRE

SITE EVALUATION COMMITTEE

Docket No. 2015-06

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Joint Application of Northern Pass Transmission, LLC

and Public Service Company of New Hampshire

d/b/a Eversource Energy for a Certificate of Site and Facility

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Supplemental

Pre-Filed Testimony of Eric and Margaret Jones
Host Property Owners to the Project and Members
of the Dummer-Stark-Northumberland SEC Mandated Group

Track - 2
Not Track 1

Our original pre-filed testimony
pertaining to water quality and natural environment
filed on 11 November, 2016
was/is incorrectly posted on the SEC website as Track 1

Submitted
3 April, 2017

Q: Please state your name and address.

A: Eric and Margaret Jones. We live at 1785 Chadwick Road, Englewood, Florida and at 1416 NH Route #25, Glencliff, NH 03238.

Q: What supplemental information do you have to provide for consideration in this proceeding?

A: Since we submitted our original Pre-Filed Testimony on November 11, 2016 we have carefully researched the Eversource Energy application and the pre-filed testimony of the Applicant's expert witnesses. These documents describe more specifically the proposed construction and consequent destruction of the existing wetland and water flow, both within the Right-of-Way (R.O.W.) and to the entire 750 acre wetland system and (within a mile or so) the Connecticut River. I attach the pertinent parts of these documents as further substantiation of our position.

I am also attaching a copy of a scale drawn diagram of the Public Service of New Hampshire R.O.W. on our land overlayed with the specific shapes, dimensions and locations of the access road, passing lanes, road connectors, crane pads, work pads, wire pulling pad, existing AC saddle poles, new AC steel monopoles, new HVDC 4 footed lattice steel towers, gas pipeline R.O.W., the gas pipeline itself, perennial streams and wetland described in the above mentioned documents. Please note that the land under the R.O.W. slopes downhill at an angle greater than 15 degrees.

All of these documents, and the above mentioned diagram drawn from the information in them, support the fact that the Northern Pass Project, overhead or buried on or under our land, will have an <u>UNREASONABLE EFFECT ON THE NATURAL ENVIRONMENT</u> <u>and WATER QUALITY</u> of this critical wetland.

The Certificate of Site and Facility should be denied.

Q: What is your Standing in this Case ?

A: We are Intervenors in this Docket.
The Right-of-Way is over our land.
We own 750 Acres of extremely critical contiguous wetland in Northumberland and Stark.
This Entire Wetland is under contract to the U.S. Government for a Wetland Reserve Easement.
We are SEC Mandated Members of the Dummer-Stark-Northumberland Intervenor Grouping.

Q: What is the precise location of the Eversource Right-of-Way on your land ?

A: Northern Pass Map#13508 = Northumberland Tax Map #224 Lot #4.....129 Acres (formerly Lot # 237)

The balance of the total contiguous holding is described as follows:
Stark Tax Map #416 Lot #1.....120 Acres
Stark Tax Map #416 Lot #2.....193 Acres
Stark Tax Map #416 Lot #3.....233 Acres

Federal Government (Natural Resources Conservation Service) estimates total acreage at 750.

Q: How will the Northern Pass Project Effect Your Land ?

A:

Main Points:

- **The Northern Pass Transmission Project cannot be built on the Public Service of New Hampshire (now Eversource) Right of Way over the land owned by Eric and Margaret Jones in Northumberland, New Hampshire <u>WITHOUT an "unreasonable effect on the natural environment and water quality"</u> of the wetland located on the property.**

- **The Northern Pass Transmission Project cannot be built on the Public Service of New Hampshire (now Eversource) Right of Way over the land owned by Eric and Margaret Jones in Northumberland, New Hampshire <u>WITHOUT causing permanent alteration to the existing wetland and water flow,</u> both within the Project right-of-way and to the entire wetland system and (within one mile) the Upper Ammonoosuc and the Connecticut rivers.**

- **The Right of Way is located on a wetland with a north to south downward slope of 15% or greater.**

- **The Right of Way is crossed by 4 water courses, one of which is the Hayes Brook, a perennial stream originating northeast of the Right of Way on the White Mountain National Forest and flowing across and down the slope of the Right of Way to the balance of the 750 acre wetland owned by the Joneses and then (within one mile) to the confluence of the Upper Ammonoosuc and Connecticut rivers.**

- **The scaled drawing submitted with this testimony clearly shows the construction activity will cover more than 90% of the sloping wetland within the Right of Way.**

- **All of the proposed structures and roads and work areas within the Right of Way need to be dry and level.**

- **In order to level a slope one must remove material on the high side and/or add material on the low side.**

- **The Project application and the pre-filed testimony of the applicant's experts allude to two methods of construction within a wetland:**

  (1) Removal of material and replacing with layers of rocks (large on the bottom then smaller and smaller) finally topping this with a soil/gravel mix. The whole lasagna is then compacted with a heavy roller.

  (2) Using layers of timber mats.

- **In the above method (1), the removal of the hydric soil and replacing it with a leveled and compacted lasagna of rock and gravel on over 90% of the sloping Right of Way would create a condition that could not be restored to pre-construction conditions. It would result in a permanent alteration to the existing wetland and water flow, both within the**

Project right-of-way and to the entire wetland system and (within one mile) the Upper Ammonoosuc and the Connecticut rivers.

- **In the above method (2), the use of layers of timber mats would not solve the need for a level surface for structures and roads and work areas.**

- **The Project Application was incomplete when accepted and remains incomplete. The scaled drawing prepared by me and submitted with this testimony, showing the location of access roads, structure location, structure foundations, crane pads, pipeline and pipeline Right of Way, wire pulling pads, and work pads is nowhere found in the Application. Even my efforts at precision are rendered nearly useless by the following:**

  (1) All maps in the Application are labeled "Preliminary Engineering."

  (2) All maps in the Application are overlaid with non-surveyed Town Tax Maps.

  (3) No survey (if one exists) is referenced for locating the PSNH/Eversource Right of Way on the subject property.

  (4) ". . .the area will be returned to pre-construction grade, to the extent practical and consistent with Eversource's ROW maintenance program."

  (5) **"The Applicants request that the SEC delegate authority to NHDES to review and approve, as necessary, the location of wire pulling sites."**

  (6) "The size and configuration of a crane pad at a particular structure location would vary based on site-specific conditions."

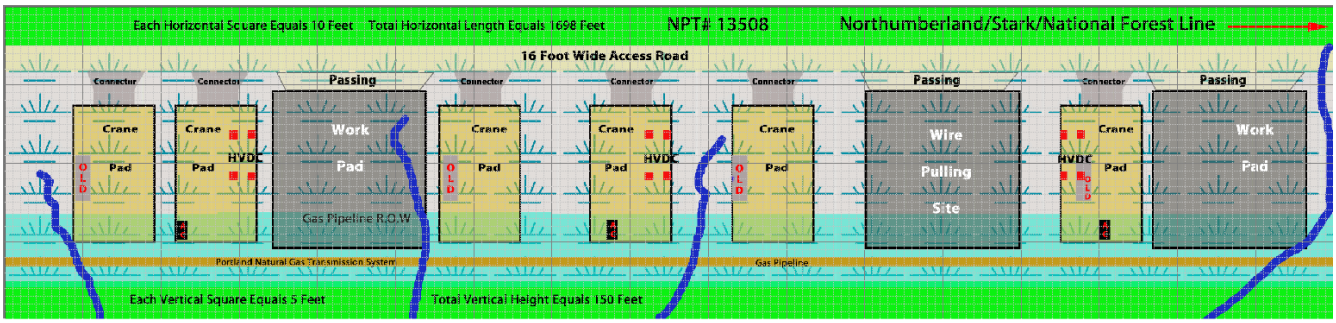
  (7) "The number and proposed locations of staging areas required to support the construction effort are determined by the contractors."

  (8) "Where necessary, Northern Pass will encourage the selected vegetation clearing contractor to use low impact tree clearing means and methods to remove forested vegetation."

  (9) "The contractor will be allowed to propose additional ON-ROW and OFF-ROW access ways during the construction phase of the Project with the review and approval of the Applicant."

Reference Documents follow:

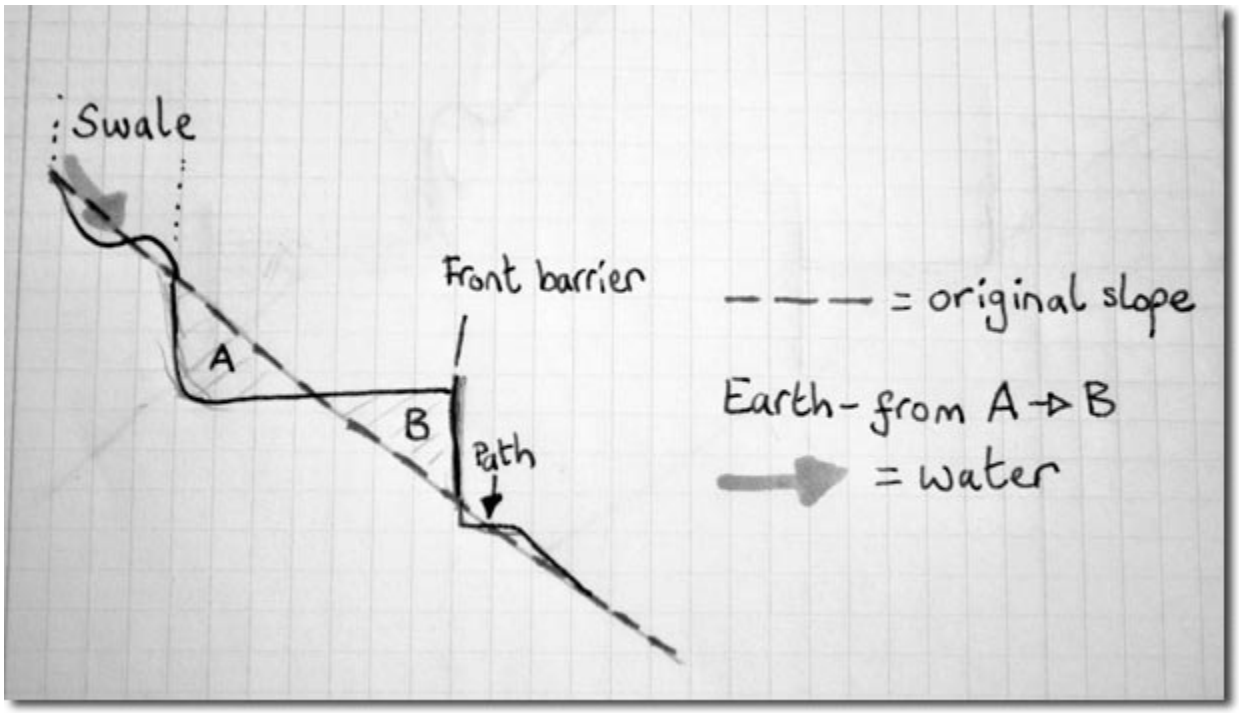
Scaled Project Diagram



Legend

OLD = 4 Existing AC distribution wooden saddle poles (to be removed)
AC = 3 New AC distribution steel monopoles (to be installed) (Base = 10′)(Foundation = 12′)
HVDC = 3 New HVDC transmission lattice steel towers (to be installed) (Base = 30′ x 30′) (Foundations (4) = 5′)
Crane Pad = 6 level & dry crane pads required at each installation/removal location (to be constructed) (100′ x 120′)
Work Pad = 2 level & dry work pad required (to be constructed) (100′ x 200′)
Wire Pulling Site = 1 level & dry wire pulling site required (to be constructed) (100′ x 200′)
= Wetland
= 4 Perenial streams
Gas Pipeline Right of Way = (50′ wide x 1698′ long)
Gas Pipeline = PNGTS actual gas pipe (to be avoided) (15′ north of the south R.O.W. boundary for 1698′)
Access Road = 1 level & dry 16 foot wide by 1698 feet long access road
Passing Lanes = 3 level & dry
Connector Lanes = 6 level & dry

Slope of Right of Way = Greater than15 % down from North(top) to South(bottom) toward abutting 700 acre wetland


Swale
Front barrier
A
B
Path
= original slope
Earth - from A → B
= water

Northern Pass Transmission Project NH Site Evaluation Committee
Application for
Certificate of Site and Facility
Section (h)

Page 42-

Structures

NPT proposes to use primarily lattice steel structures, with some tubular steel monopole structures that are required by physical design limitations or proposed to reduce or eliminate potential visual impacts. The lattice configuration will have an approximate base dimension of 30 feet by 30 feet and taper to a six foot by five foot column half way up the structure, anchored to four concrete foundations at the corners of the base approximately three to five feet in diameter. Monopole configurations will be approximately five to ten feet in diameter at the base, tapering to approximately one to two feet in diameter at the top, anchored to concrete foundations approximately seven to twelve feet in diameter. The structure heights proposed for the HVDC portion of the Project range from 60 feet (five structures) to 135 feet (one structure). Of the 858 structures required for the HVDC portion of the Project, 356 are proposed at heights between 80 feet and 85 feet, with the largest numbers

Page 43

of structures proposed to be 80 feet (169 structures) and 85 feet (187 structures). There are 340 structures in the 345 kV AC portion of the Project and much greater variability in height because of space restrictions in the existing corridor. The AC structures range in height from 48 feet to 160 feet, with 286 of the structures ranging from 70feet to 130 feet. The largest number of 345kV structures will be 80 or 130 feet tall (each with 36 structures). The majority of structures will be spaced approximately 600 to 650 feet apart with maximum spacing of approximately 1,000 feet. For HVDC clearances, the horizontal distance between each energized conductor and the support structure will be 12 to 17 feet. Minimum clearance to ground from the conductors will be 30 feet. For the 345 kV AC circuit, the horizontal distance between an energized phase and the support structure will be 13 to 15 feet. Minimum clearance to ground from the conductors will be 29 feet. Both HVDC and AC line clearances meet or exceed code standards. PSNH Line Relocations Along certain sections of the existing ROW, existing PSNH 115 kV transmission lines and 34.5 kV distribution lines will be relocated to make room for the Northern Pass transmission line, and to reduce tree clearing and structure heights where practicable. For the HVDC portion of the line, NPT will relocate approximately 51 miles of existing 115 kV lines and 12 miles of 34.5 kV lines. For the 345 kV AC portion of the line, NPT will relocate approximately 16 miles of existing 115 kV lines and five miles of 34.5 kV lines.

Pages 46-

(3)
A Description in Detail of the Impact of Each Major Part of the Proposed Facility on the Environment for Each Site Proposed Extensive surveys of natural resources potentially affected by any component of the Project were conducted by an experienced team of consultants at

Normandeau Associates, Inc. in consultation with the regulatory authorities. The studies conducted to identify resources, assess impacts and avoid and minimize potential negative impacts are described in detail in Sections(h)(4) and (i)(1-5). The results of these studies were incorporated into the siting and design of the Project, resulting in a final design that avoids and minimizes environmental impacts to the extent practicable, while still achieving the goals of the Project. All parts of the Project, including the transmission structures and underground cable, temporary access roads, work pads, and the nine development sites (converter terminal, substation expansion and transition stations) were located to avoid and minimize impacts to wetlands, streams, vernal pools, and the protected shoreland around public waters, designated rivers, and 4th order and larger streams. Unavoidable impacts to these resources were quantified and described in the NHDES Standard Dredge and Fill Permit Application, the NHDES Shoreland Applications, and the USACE Section 404/10 Permit Application found in Appendices 2, 5 & 3, respectively, and in the Wetlands, Rivers, Streams and Vernal Pools Resource Report and Impact Analysis, Appendix 31. These impacts are mostly temporary in nature, and restoration will occur in these areas. The unavoidable permanent resource impacts, along with secondary impacts, are addressed in the Project's natural resource mitigation

Northern Pass Transmission Project
NH Site Evaluation Committee
Application for
Certificate of Site and Facility
Section (g)
Page 28

Installation of Foundations and Structures

There are three separate foundation types planned for new transmission structures:
drilled shaft (utilized for lattice tower structures and steel monopole and H-frame structures), grillage (utilized for lattice tower structures) and direct embedded structures (utilized for steel monopole and H-frame structures).

The installation of drilled shaft foundations begins by mobilizing the drill equipment and setting up over the foundation locations. The foundation drilling process involves drilling holes that vary in diameter and depth dependent on the design, structure type and results of the geotechnical report and presence of rock. Once drilling is complete, a steel rebar cage and anchor bolt assembly is placed in each hole and concrete is poured to construct a foundation for the new steel

structure or lattice tower. Concrete trucks are used to deliver the concrete mix for the foundations. Drilling operations typically occur for two to five days at each structure location.

The installation of grillage foundations is accomplished by the use of conventional construction equipment, such as an excavator. The excavation is typically an area between six feet and fifteen feet squared and up to fifteen feet deep. The steel grillage foundation along with stub angles are placed in the hole and then backfilled with either select backfill material or concrete. Installation of grillage foundations will typically occur for two to three days at each structure location.

Direct embedded foundations are installed by excavating a hole to the required depth using excavator or drill equipment to dig the hole. The structure is placed in the hole and then filled with a suitable backfill material. In locations where rock is encountered, the foundation hole is excavated to the rock depth and the contractor will use other approved methods to remove the rock including ripping, hoe ramming, or blasting, to achieve the required depth.

During construction of the Project, it is likely that occasional shallow-to-bedrock soil depths and subsurface boulders will be encountered. Blasting may be required in order to place transmission line support structures.
For transmission line construction, blasting activity will be limited to the small volume of material needed to be removed to fit and plumb the pole structures. Only small charges are required for the installation of transmission structures. The blasting plan will reflect this limited use of charges. See also Section (i)(6).

section of the ROW. Once complete, the existing line will be de-energized so that power can be transferred to the newly built line. The de-energized lines will then be removed so that the Project construction can continue.
Existing structures that require removal will be de-energized and the overhead wires removed. If concrete foundations are encountered, they will be removed below grade and the area will be filled with appropriate soils. All of the demolition debris such as wood poles, steel structures, insulators, conductor and concrete will be taken off-site to an approved waste management facility for recycling or disposal.

Application Section(g)/Page 25 and 26

Removal of Vegetation and Mowing in Advance of Construction

The ROWs will be cleared of trees and brush to provide the necessary access for construction equipment and a safe work area for crews. Clearing the ROWs provides for an environment that safely and reliably supports the construction and ongoing operation of the transmission lines.

No herbicides will be used for clearing during construction.

During the tree clearing operations the preliminary erosion control measures will be installed on an as needed basis. As the tree clearing operation progresses along the ROW, the transmission line construction process will begin and follow the tree clearing operations.

Where the Project will be constructed in the area of new ROW, construction will commence with clearing of all tall-growing woody species within the 120 foot width of the ROW. The remainder of the overhead transmission line route is located in existing transmission line corridors and will require mowing of access roads, selective clearing and side trimming to accommodate the additional transmission line.

Generally, trees will be cut close to the ground, leaving the stumps and roots in place to minimize ground disturbance. Stumps will only be removed where required to facilitate structure installations, access, or a safe working environment. Small trees and shrubs within the ROW will be mowed, as necessary, with the intent of preserving roots and low-growing vegetation to the extent practical.

Where the ROW crosses streams and brooks, low-growing vegetation along the stream bank will be selectively cut to preserve a riparian buffer that will minimize the disturbance of stream bank soils and reduce the potential for erosion and sedimentation. In addition, the Applicants will preserve low-growing vegetation in accordance with regulatory guidance or permit conditions, as necessary, to protect rare, threatened, and endangered ("RTE") species or habitats.

This Project will span more than one growing season; therefore, additional mowing of access roads and work pads may be required as vegetation re-gener**ates** in these locations**.**

Construction of Access Improvements

Construction vehicles must be able to access the location of each structure that will support the transmission lines. Therefore, access to the construction sites will be achieved by utilizing existing roads, developing new roads or by using timber mats. Timber mats may be used in or around wetlands to protect these environmentally sensitive areas. Silt fencing and/or other environmental controls will also be used to stabilize the soil and protect wetlands during construction. At the request of property owners, gates may be installed across new access roads where they intersect town or state roads to help deter unauthorized access to the ROW or where access roads cross agricultural land containing livestock.Access road improvements average two to three days on each property.

Construction of Work Pads and Pulling Sites At each transmission line structure site along the ROW, a work area, called a "crane pad", is required to stage structure components for final on-site assembly and to provide a safe, level work base for the construction equipment used to erect the structure. The size and configuration of a crane pad at a particular structure location would vary based on site-specific conditions; however, a typical pad averages about 120 feet by 100 feet. The exact locations and configurations of crane pads will be determined during final Project design based on site-specific conditions (e.g., to avoid or minimize work in wetlands or other environmentally- or culturally-sensitive areas). However, at each structure site, the crane pad will generally be situated within the structure location envelope identified on the Project Maps.

A typical (upland) installation of a crane pad involves several steps, beginning with the removal of vegetation, if necessary. The crane pad site then will be graded to create a level work area and, if necessary, the upper three to six inches of topsoil (which is typically unsuitable to support the necessary construction activities) will be removed and temporarily stockpiled within the ROW. A filter fabric layer then will be installed over the excavated area and a rock base allowing for drainage, then would be layered on top of the filter fabric. Additional layers of rock with dirt/rock fines are typically placed over this rock base. Finally, a roller is used to flatten and compact the pad. Crane pads often can be modified and contoured to the surrounding area to minimize impacts. In areas where crane pads must unavoidably be located in wetlands, layers of removable timber mats are typically used to construct the pads. Alternatively, a large rock base layer may be used to allow water to flow underneath the pad with smaller rock, layered on top of larger rock, followed by the final layer of gravel intermixed with soil.

The wire-stringing operation requires a work pad approximately 100 feet by 200 feet, which is used for staging material and the puller and tensioner equipment, at each end of the section that is being strung. These pulling sites will be set up at various intervals along the ROW and are placed just before the stringing activity takes place. The Applicants request that the SEC delegate authority to NHDES to review and approve, as necessary, the location of wire pulling sites.

Upon completion of construction, the crane pads and wire pulling sites, rock base and fabric materials, and timber mats (where used for crane support in wetlands) will be removed. The topsoil layer will be re-spread over the crane pad site and the area will be returned to pre-construction grade, to the extent practical and consistent with Eversource's ROW maintenance program.

Northern Pass Transmission Project Pre-filed Direct Testimony of John Kayser
Joint Application of Northern Pass and PSNH

Q. Please describe the crane pads in detail.

A. At each transmission line structure site along the ROW, a work area, called a "crane pad", is required to stage structure components for final on-site assembly and to provide a safe, level work base for the construction equipment used to erect the structure. The size and configuration of a crane pad at a particular structure location would vary based on site-specific conditions; however, a typical pad averages about 120 feet by 100 feet. The exact locations and configurations of crane pads would be determined during final Project design, based on site-specific conditions (e.g., to avoid or minimize work in wetlands or other environmentally- or culturally-sensitive areas). Generally, however, at each structure site, the crane pad would be situated within the structure location envelope identified on the mile sheets. Please see Project Maps, Appendix 1, for their proposed locations.

A typical (upland) installation of a crane pad involves several steps, beginning with the removal of vegetation, if necessary. The crane pad site then would be graded to create a level work area and, if necessary, the upper three to six inches of topsoil (which is typically unsuitable to support the necessary construction activities) would be removed. The topsoil would be temporarily stockpiled within the ROW. A filter fabric layer then would be installed over the excavated area. A rock base, which allows drainage, then would be layered on top of the filter fabric. Additional layers of rock with dirt/rock fines are typically placed over this rock base. Finally, a roller is used to flatten and compact the pad. Crane pads often can be modified and contoured to the surrounding area to minimize impacts. In areas where crane pads must unavoidably be located in wetlands, layers of removable timber mats are typically used to construct the pads. Alternatively, a large rock base layer may be used to allow water to flow underneath the pad. Smaller rock is layered on top of larger rock, followed by the final layer of gravel intermixed with soil.

Upon completion of construction, crane pads would typically be removed. The rock base and fabric materials would be excavated and removed for off-site disposal. Timber mats, where used for crane support in wetlands, would similarly be removed. The topsoil layer would be re-spread over the crane pad site and the area would be returned to pre-construction grade, to the extent practical and consistent with Eversource Energy's ROW maintenance program.

Q. Please describe the on-ROW Access Roads.

A. Contiguous access along the existing ROWs is generally not necessary for the construction of the proposed overhead transmission lines, although access is required to each proposed transmission structure location. Along most of the Proposed Route, the existing 115 kV lines (and other transmission and distribution lines) have been in service for more than 50

10 years and, as a result of the ongoing operation and maintenance activities along those
11 transmission lines, some access roads are already established. Such existing access roads would
12 be used for the construction of the new transmission lines wherever possible. The on-ROW
13 access roads expected to be used for the proposed Project are illustrated on the Project Maps, see
14 Appendix 1. NPT requests that the SEC delegate any required approvals of additional access
15 ways to NHDES, in accordance with the delegation request contained in (d)(2) and (g)(8) of the
16 Application.
17 However, most of the existing access roads would have to be improved, widened, or
18 otherwise modified in order to be used safely and effectively during construction. For example,
19 to safely support the heavy construction equipment (e.g., flat-bed trailers, cranes, and concrete
20 trucks) required to install transmission line structure foundations and transmission line structures,
21 access roads must be sufficiently wide, with a stable base and grades that typically must be 10%
22 or less.
23 Access road improvements typically include clearing adjacent vegetation and widening
24 roads as needed to provide a minimal travel surface approximately 12 to 16 feet wide (additional
25 width would be needed at turning or passing locations). Access roads may be graveled. Where
26 access roads traverse streams or wetlands, culverts and timber mats (or equivalent) may be used.
27 Existing culvert crossings may also be improved. Erosion and sedimentation controls would be
28 installed as necessary before the commencement of any improvements to or development of29
access roads.

Q. Please describe the staging areas in detail.

Northern Pass Transmission Project Pre-filed Direct Testimony of John Kayser
Joint Application of Northern Pass and PSNH
Page 17 of 34

28 A. Staging areas, which are generally less than two acres in size, are typically used
29 for temporarily stockpiling materials for transmission line construction (e.g., erosion and
30 sedimentation control materials, poles and structure components, insulators and hardware, and
31 construction equipment). In addition, staging areas may be used to temporarily stockpile
materials removed from the ROW or used during the construction 1 process, prior to off-site
2 disposal. The number and proposed locations of staging areas required to support the
3 construction effort are determined by the contractors.
4 Staging areas are required in proximity to the Project route and may be located on or off
5 the ROW. PSNH-owned property that is presently used for utility purposes or otherwise cleared
6 of vegetation will be used for staging areas to the extent practical. Locations along the ROW
7 may also be used, provided sufficient easement rights exist.
8 As construction progresses, staging areas will be relocated to coincide with construction
9 work. When a particular staging area is no longer required, the site is returned to its pre10
construction condition, to the extent practical, as requested by the property owners.

Q. How will NPT clear vegetation to construct the Project?

Northern Pass Transmission Project Pre-filed Direct Testimony of John Kayser
Joint Application of Northern Pass and PSNH
Page 18 of 34

24 A. To accommodate the construction and subsequent operation of the new Northern
25 Pass Transmission lines, vegetation removal will be required. Vegetation along the ROWs may
26 be removed where necessary to allow for construction, to provide and maintain access to
27 structures and, as needed, along the ROWs, and to provide safe distances between the conductors
28 and woody vegetation at all times. However, the amount of and type of vegetation clearing
29 required would vary and would depend on factors such as the need to create additional ROW,
30 existing width of the existing managed ROW, vegetation communities present (e.g., forested,
herbaceous, scrub-shrub, open field), the type of the new transmission 1 structures, configuration
2 and spacing of the transmission line conductors, transmission line span lengths, and terrain.
3 As part of the construction of the new transmission lines, undesirable, tall-growing,
4 woody species within the ROW areas proximate to the new lines will be removed. Desirable
5 species would be preserved to the extent practical. In selected cases, certain desirable, low6
growing trees may be kept on the ROW in specific locations and only trimmed to ensure
7 adequate clearance from wires and structures, pursuant to Eversource Energy' Right-of-Way
8 Vegetation Initial Clearance Standard for Transmission Lines. Generally, all tall-growing tree

9 species would be removed from the managed portion of the ROWs and low-growing tree species
10 and taller shrub species would be retained in the areas outside of the conductor zones (the area
11 directly under the conductors extending outward from the outermost conductors).
12 Vegetation will be typically removed from the Project's construction workspace
13 (including the areas to be managed in the vicinity of the new line) using mechanical methods.
14 Where necessary, Northern Pass will encourage the selected vegetation clearing contractor to use
15 low-impact tree clearing means and methods to remove forested vegetation. Low-impact tree
16 clearing incorporates a variety of approaches, techniques, and equipment to minimize site
17 disturbance and to protect wetlands, watercourses, soils, rare species and their habitats, and
18 cultural resources.
19 During vegetation removal, timber mats or equivalent may be used to provide a stable
20 base for clearing equipment across wetlands or within wetlands along the ROW. Such
21 temporary support would minimize rutting in wetlands and would be removed after the clearing
22 activities are completed. The locations where temporary support would be required would be
23 determined in the field, based on site-specific conditions (e.g., soil saturation) present at the time
24 of construction, and may not be the same as the permanent or temporary access roads illustrated
25 on the Project Maps. See Appendix 1.
26 Appropriate erosion and sedimentation controls would be deployed as necessary. See
27 erosion and soil control details in the Alteration of Terrain Permit Application, Appendix 6.
28 Where removal of woody vegetation is required, vegetation will be cut flush with the ground
29 surface to the extent possible. Where practical, trees would be felled parallel to and within the
30 ROW to minimize the potential for damage to residual vegetation.

NPT will take particular care to retain lower growing 1 vegetation along stream banks and
2 within wetlands to the extent possible. In general, NPT may alter to some degree vegetation
3 management activities in the following areas, provided that the construction and operation of the
4 facilities remains in accordance with national transmission line vegetation management
5 standards:
6 • Areas of visual sensitivity where vegetation removal may be limited for aesthetic
7 purposes;
8 • Steep slopes and valleys spanned by transmission lines;
9 • Agricultural lands; and
10 • Residential areas where maintained landscapes do not interfere with the
11 construction, maintenance, or operation of the transmission lines.

The Environmental Impact of Utility Poles

Dartmouth School of Engineering

Final Paper
ENGS 171
5/28/08
Anders Wood
Deepti Reddy
Rajasekhar Koganti

Utility Poles

These poles help provide for our growing network of telephones, televisions, and computers. Though wires are frequently covered underground in new grid expansions, there are still roughly 135million utility poles in service in the United States.[ii] While some steel and concrete poles are in use, the vast majority of utility poles are wood. Wooden poles are very robust,non conductive, and allow for overhead wires to be attached in a variety of ways. Another advantage is the low cost: approximately $250 for a standard 45-foot pole versus$260 and $350 for steel and concrete (respectively). As will be shown later using Carnegie Melon University's life cycle analysis (LCA), wooden poles also have a seemingly small environmental impact based on energy consumption, greenhouse gas emissions and toxic releases. There are significant environmental drawbacks, however,which are not addressed by this LCA. These drawbacks revolve around the poisonous chemical preservatives added to the wood to extend their lifespan. For example, each year approximately 18 million[iii] kg of arsenic, a heavy, poisonous metal, are removed from service with the wooden utility poles and dumped in landfills. This project explores the impacts of these preservatives and offers several solutions.

Alternatives

There are several ways to avoid or reduce the environmental impacts of utility poles. The inverted pyramid model shown in Appendix C illustrates various actions that can be taken. **The best solution would be to avoid the use of utility poles and instead use underground transmission lines, or produce electricity locally to avoid transmission over long distances.** Another way to prevent pollution due to the preservatives is to use a more benign preservative or use materials like steel and concrete which are not prone to rot and pests.

9 December, 2016

NOTICE OF FOREST PLAN AMENDMENT APPROVAL - Tongass National Forest Land and Resource Management Plan Amendment

This Land and Resource Management Plan (Forest Plan) guides all natural resource management activities and establishes management direction for the Tongass National Forest.

Wetlands
Minimize the destruction, loss,or degradation of wetlands, and preserve and enhance wetland functions and values.

Avoid alteration of, or new construction on wetlands, wherever there is a practicable, environmentally preferred alternative.

The Forest Plan Amendment was shaped by best available science, current laws, and public participation including participation of a cooperating agency (U.S. Fish and Wildlife Service); consultation with Alaska Native tribes and Alaska Native Corporations; advice and recommendations from the Tongass Advisory Committee, a Federal Advisory Committee established by the U. S. Department of Agriculture; and significant public contributions from nine open house meetings, nine subsistence hearings, and the **receipt of over 165,000 public comments**.

Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report) January, 2015

The U.S. Environmental Protection Agency's (USEPA) Office of Research and Development has finalized the report *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence*. The report reviews more than 1,200 peer-reviewed publications and summarizes current scientific understanding about the connectivity and mechanisms by which streams and wetlands, singly or in aggregate, affect the physical, chemical, and biological integrity of downstream waters. The focus of the report is on surface and shallow subsurface connections by which small or temporary streams, nontidal wetlands, and open waters affect larger waters such as rivers, lakes, reservoirs, and estuaries.

This report represents the state-of-the-science on the connectivity and isolation of waters in the United States. It makes five major conclusions, summarized below, that are drawn from a broad range of peer reviewed scientific literature.

- The scientific literature unequivocally demonstrates that streams, regardless of their size or frequency of flow, are connected to downstream waters and strongly influence their function.
- The scientific literature clearly shows that wetlands and open waters in riparian areas (transitional areas between terrestrial and aquatic ecosystems) and floodplains are physically, chemically, and biologically integrated with rivers via functions that improve downstream water quality. These systems act as effective buffers to protect downstream waters from pollution and are essential components of river food webs.
- There is ample evidence that many wetlands and open waters located outside of riparian areas and floodplains, even when lacking surface water connections, provide physical, chemical, and biological functions that could affect the integrity of downstream waters. Some potential benefits of these wetlands are due to their isolation rather than their connectivity. Evaluations of the connectivity and effects of individual wetlands or groups of wetlands are possible through case-by-case analysis.
- Variations in the degree of connectivity are determined by the physical, chemical and biological environment, and by human activities. These variations support a range of stream and wetland functions that affect the integrity and sustainability of downstream waters.
- The literature strongly supports the conclusion that the incremental contributions of individual streams and wetlands are cumulative across entire watersheds, and their effects on downstream waters should be evaluated within the context of other streams and wetlands in that watershed.

This report was developed to inform rulemaking by the U.S. EPA and the U.S. Army Corps of Engineers on the definition of "waters of the United States" under the Clean Water Act (CWA).

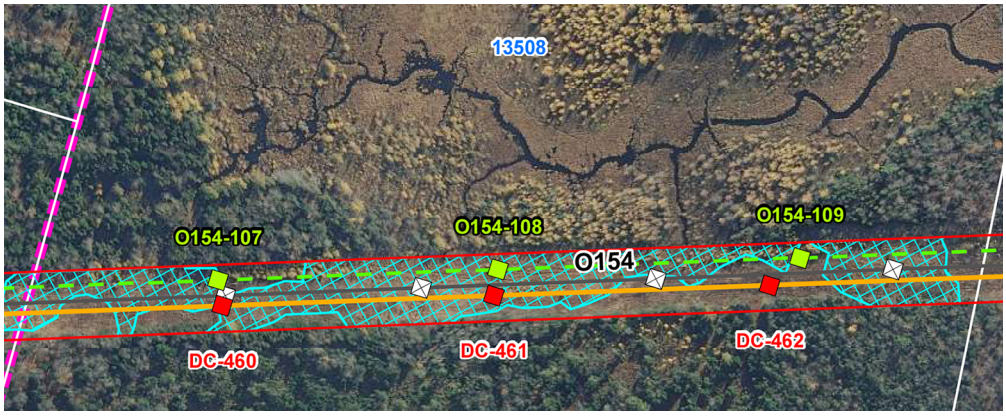
The report summarizes current scientific understanding about the connectivity of streams and wetlands to downstream waters. EPA has conducted a thorough review of the literature – more than 1,200 peer-reviewed and published documents – on the scientific evidence regarding the effects that streams, nontidal wetlands, and open -waters have on larger downstream waters such as rivers, lakes, estuaries, and oceans. The focus of the report is on surface and shallow subsurface connections by which small or temporary streams, nontidal wetlands, and open waters affect larger waters such as rivers, lakes, reservoirs, and estuaries. EPA, along with other federal agencies and states, can use this scientific

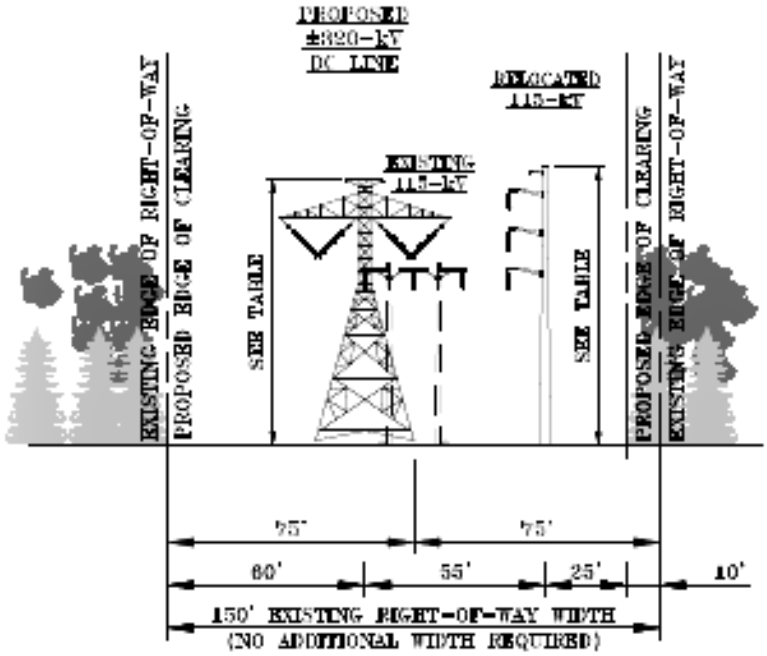
report to inform policy and regulatory decisions, including the Clean Water Rule being developed by EPA and the U.S. Army Corps of Engineers.

Conclusions:

- All science based literature regarding wetlands and the agencies charged with protecting them recognize that wetlands are a coordinated system of streams, vernal pools, marshes and rivers.
- Wetlands are vital to flood control, drinking and agricultural water recharge, and wildlife habitat.
- The Northern Pass Project will disturb, alter, damage and pollute thousands of wetland acres within the state and hundreds of wetland acres within our property.
- No effective mitigation can be applied, even if Northern Pass was proposing any, given the federal and state edicts of "No Net Loss of Wetland".
- The evidence presented shows, pursuant to **SEC rules and criteria for findings,** that the Northern Pass Project **will have an unreasonable adverse effect on water quality.**
- The evidence presented shows, pursuant to **SEC rules and criteria for findings,** that the Northern Pass Project **will have an unreasonable adverse effect on the natural environment.**

Applicant's Map is upside down
South at top
North at bottom





SEGMENT N2-6

Structure Number	Structure Height	Cross Section
DC-458	85	N2-6
DC-459	75	N2-6
DC-460	70	N2-6
DC-461	80	N2-6
DC-462	80	N2-6
DC-463	90	N2-6
DC-464	85	N2-6
DC-465	115	N2-6T
DC-466	130	N2-7T
DC-467	130	N2-7T
DC-468	115	N2-7T
DC-469	70	N2-7
D142-304	80	N2-7
D142-305	90	N2-7
O154-105	92.5	N2-6
O154-106	79	N2-6
O154-107	83.5	N2-6
O154-108	92.5	N2-6
O154-109	88	N2-6
O154-110	97	N2-6
O154-111	97	N2-6
O154-112	90	N2-6

Book 346 pg 313+314
#379

EAA - 961 | Easement

(U. S. Stamps $.55) KNOW ALL MEN BY THESE PRESENTS | John W. Silver to Public Service of N.H.

THAT John W. Silver of Northumberland County of Coos in the State of New Hampshire (hereinafter called the grantor) in consideration of one dollar and other valuable considerations paid by the Public Service Company of New Hampshire, a corporation having a principal place of business at Manchester, in the County of Hillsborough, and the State of New Hampshire (hereinafter called the grantee), the receipt whereof is hereby acknowledged, do hereby give, grant, bargain, sell and convey unto the grantee, its successors and assigns, the right to erect, repair, maintain, rebuild, operate and patrol electric transmission and distribution lines, consisting of suitable and sufficient poles and towers, with suitable foundations, together with wires strung upon and extending between the same, for the transmission of electric current, together with all necessary cross-arms, braces, anchors, wires and guys, over and across a strip of land 150 feet in width being a part of the lands owned by the grantor in the town of Northumberland and county of Coos, bounded and described as follows:

Lot number seventy three (73) in the third (3rd) Division of lots in the Township of Northumberland, N. H.

Being a part of the same premises described in deed of Almina E. Greenleaf to John W. Silver dated May 5, 1922 and recorded in the Coos County Registry of Deeds, Book 213 Page 34.

Said 150 foot strip of land across the above described premises shall extend 75 feet on each side of a center line bounded and described as follows:

Starting on the boundary line between Frank Elmon and Ronald W. Moses, at a point four hundred and twenty nine feet (429') more or less (measured along said boundary line) south of spotted maple tree, marking northwest corner of lot number seventy three (73) in the third (3rd) division of lots in the Town of Northumberland and extending on a course of north eighty four degrees east (N 84°E) to the Stark - Groveton Town Line, sixteen hundred and ninety feet (1690') more or less.

This conveyance shall include (1) the right to cut, trim and remove all trees and underbrush, and to remove all structures or obstructions, which are now or may hereafter be found within the limits of the above described right of way strip and (2) the right to remove from the premises of the grantor above described such trees as in the judgment of the grantee may interfere with or endanger said lines or their operation.

All timber and wood cut by the grantee hereunder shall remain the property of the grantor; but the grantee, by accepting this deed, agrees to cut said timber into 12-14-16 foot lengths and said wood into 4 foot lengths.

And the parties hereto, by delivering and accepting this deed, agree that all agreements, understandings and negotiations, written or verbal, heretofore made or entered into by the parties hereto or their representatives with respect to this

LL: NH-ALT 379.00

PORTLAND NATURAL GAS TRANSMISSION SYSTEM RIGHT-OF-WAY AGREEMENT

EASEMENT DEED

KNOW ALL BY THESE PRESENTS: that Charlotte Gay Vautier of Pelham, County of Coos, and State of New Hampshire, and their successors, heirs, and assigns ("GRANTOR," whether one or more), for ten dollars ($10) and other good and valuable consideration, the receipt of which is mutually agreed, grants to PORTLAND NATURAL GAS TRANSMISSION SYSTEM, a Maine Partnership, the mailing address of which is 300 Friberg Parkway, Westborough, Massachusetts 01581-5039, its successors and assigns, ("GRANTEE"), a right-of-way and easement for the purposes of preparing, laying, constructing, maintaining, operating, altering, improving, repairing, changing the size of, replacing and removing: (1) pipelines and all related equipment and appurtenances thereto (including but not limited to meters, fittings, tie-overs, valves, and cathodic protection equipment) for the transportation of oil, gas or the by-products of either, and other substances that can be transported through a pipeline; and (2) lines, cables, and all related equipment and appurtenances thereto for the operation of communication lines; (collectively (1) and (2), the "Lines") under, over and across the tract or tracts of land ("Land") of GRANTOR, situated in the Town of Northumberland, County of Coos, State of New Hampshire, and being more particularly bounded and described as follows:

All of that certain plot, piece or parcel of land as described by deed dated 9-8-79, recorded 9-12-79, at book 623, page 95; being further identified as tax map R-6 lot 237.

Said right-of-way and easement shall extend under, over and across the Land, shall be 50 feet in width, being 35 feet on the Northerly side and 15 feet on the Southerly side of the centerline of the first pipeline as laid (the "Corridor"). Any additional Lines must be placed within the confines of said Corridor.

GRANTOR hereby grants to GRANTEE a temporary right-of-way and easement extending 15 additional feet on the Northerly side and 10 additional feet on the Southerly side of the Corridor to allow for a temporary workspace contiguous to the Corridor when such is necessary for the purposes of preparing, laying and constructing any and all Lines which may be placed within the Corridor. Said temporary right-of-way and easement shall expire upon completion of the laying and construction of the first pipeline or upon receipt of all necessary permits, approvals and notifications of compliance from the appropriate jurisdictional regulatory agencies with respect to the first pipeline laid, whichever is later.

GRANTOR reserves all oil, gas and minerals on and under the Land and the right to farm, graze and otherwise fully use and enjoy the Land, subject to the rights and privileges and authority herein granted, provided, however, that GRANTEE shall have the right hereafter to cut and keep clear by any means available all trees, brush, structures, dwellings, and other obstructions that may injure, endanger or interfere with the exercise of its rights and easements granted hereby.

GRANTEE shall have all privileges convenient for the full and exclusive use of the rights and easements herein granted, together with ingress and egress on foot and by vehicle, along the Corridor and temporary right-of-way and easement and to and from the Corridor and temporary right-of-way and easement over and across existing or future roads, pathways or trails. GRANTOR agrees that no excavation, change of grade nor water impoundment will be made on and no trees, brush, structures, dwellings, or other obstructions will be placed or erected over, under or across the Corridor without prior written consent of the GRANTEE.

GRANTEE, by the acceptance hereof, agrees to pay for damages to crops, pasture, fences, timber, livestock and all other personal property which may arise from preparing, laying, constructing, maintaining, operating, altering, improving, repairing, changing the size of, replacing or removing said Lines.

A13L

PNGTS Operating Co., LLC

One Harbour Place
Portsmouth, New Hampshire 03801
603/559-5500
603/427-2807 (Fax)

A Subsidiary Of
Portland Natural Gas
Transmission System

March 7, 2003

Mr. Eric Jones
1785 Chadwick Road
Englewood, Fl 34223

Re: NH Alt. 379.00, Northumberland Property, formerly owned by Charlotte Vautier

Dear Mr. Jones:

Thank you for your call. As you requested, I have enclosed a portion of our engineering drawings, which show the property which you recently purchased. Unfortunately, these drawing probably are not as clear as what you need. The property in question, #379, is actually on two sheets. Use the matchline, labeled 237+00, to line them up. Of note, we identified the vast majority of this area as wetland. It does not appear that we located any property monuments during the original survey, but the property does back up to the Stark town line and the White Mountain National Forest and I believe that line is fairly well marked.

I have also enclosed a copy of the PNGTS easement deed and the PSNH easement. Our actual permanent easement is fifty feet wide, and any reference to temporary easements, have now expired. You should also know that PNGTS has released any rights it acquired under this easement agreement to lay additional pipelines. It appears that the PSNH easement in this area is one hundred and fifty feet wide and the PNGTS easement mostly overlaps this easement.

(1) In order to keep our files up to date, please send me a copy of your deed, at your convenience. I will update our mailing list with your name and address. Please do not hesitate to call me, should you have any further questions. If you have internet access, please check out our website at www.pngts.com.

SENT 12 MAY, 2003 RE

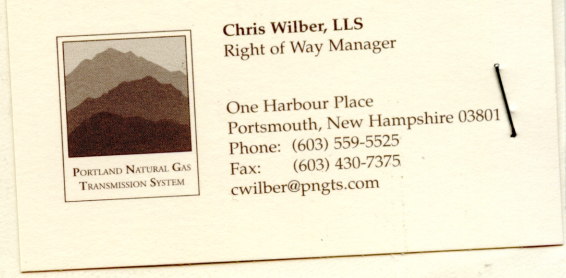
Very truly yours,

Chris Wilber, LLS
Manager, Right of Way

Enclosure(s): Plan copies & deeds.

cc: file

Printed on Recycled Paper



GROVETON 636-1450

Town of Northumberland

Office of Selectmen

Groveton, New Hampshire 03582

February 12, 1992

A.A. Vautier and Charlotte Gay
PO Box 366
Pelham, NH 03076

Dear Mr. Vautier and Ms. Gay:

The Town of Northumberland is conducting a groundwater exploration program in your area of Lost Nation. The primary location being studied is a town-owned lot near the present Moore Brook impoundment. If this lot proves unproductive, the town will be expanding its search in the area to possibly, with your permission, include a parcel owned by you which we have identified as Lot # 237 .

The exploration procedure would first involve a geophysical survey to determine the lot's potential to provide sufficient amounts of groundwater to satisfy town needs. If that survey proves successful, a limited-access road would have to be constructed to provide access for a drill rig. This might require some fill and/or some dozing. If your lot proved successful, then the town must obtain ownership or easement rights to your lot or a portion thereof.

The first step in this whole procedure, if your lot is to be studied further, is to enter into an agreement with you that would allow this planning work to be done and to provide the town with assurances that ownership or easement rights can be obtained for your lot in the event it is chosen as a site for a groundwater well.

If you have any questions or concerns regarding this matter, please get in touch with me at the town office at your convenience. Otherwise, we will be in touch with you if the town wishes to seek permission for further study of your lot.

Sincerely,

Ronald J. Gilbert

Ronald J. Gilbert
Town Manager

avail -
8-12
1-4

cf'd 2/19/92 - he will send further info & data for my permission -